CLAIMS

We claim:

1. A method of specifying encoded sub-networks, wherein each sub-network has a set of circuit elements, the method comprising:

a) defining a plurality of graphs, wherein each graph has a set of nodes;

b) specifying different sets of local functions for each graph, wherein each set of local function for each particular graph includes one local function for each node of the particular graph, and the combination of each graph with one of the set of local functions specified for the graph specifies a sub-network;

c) storing the graph and the local functions;

d) for each particular specified sub-network, storing an identifier that specifies the set of particular local functions and the particular graph that specify the particular sub-network.

2. The method of claim 1, wherein the identifier for each particular sub-network specifies the locations for storing the set of particular local functions and the particular graph that specify the particular sub-network.

3. The method of claim 1, wherein the identifier for each particular sub-network is a set of indices that specifies the set of particular local functions and the particular graph for the particular sub-network.

4. The method of claim 3, wherein the set of indices for each particular sub-network includes a graph index and a set of function indices, wherein the graph index identifies the particular graph for the particular sub-network, and each function index identifies a particular local function of the particular sub-network.

5. The method of claim 4, wherein the storage structure is a database, and the graphs are stored in a graph table, and the local functions are stored in at least one function table, wherein each graph index specifies a record in the graph table, and each function index specifies a record in the function table.

6. The method of claim 5, wherein the local functions are stored in multiple function tables, wherein a first function table is for are n-input functions, and a second function table is for m-input functions, where n and m are integers, wherein some of the function indices specify functions in the first function table while other function indices specify functions in the second function table.

7. The method of claim 1, wherein defining the graphs comprises defining graphs up to a particular threshold complexity that relates to at least one structural attribute of the graphs.

8. The method of claim 7, wherein each graph receives a set of inputs, wherein the structural attribute relates to the number of inputs in the set of inputs of each graph.

9. The method of claim 7, wherein the structural attribute relates to the number of nodes of each graph.

10. The method of claim 7, wherein the structural attribute relates to the number of interconnections between the nodes of each graph.

11. The method of claim 1 further comprising:

a) identifying a set of output functions for each particular specified sub-network from the set of local functions used to specify the sub-network;

b) generating a parameter for each sub-network based on the identified set of output functions for each sub-network;

c) storing the generated parameters in the storage structure, and

d) associating the stored parameter for each sub-network with the identifier for the sub-network.

12. A method of encoding sub-networks, the method comprising:

a) specifying a plurality of graphs, wherein each graph has a set of nodes;

b) specifying a plurality of local functions;

c) specifying a plurality of sub-networks by identifying for each sub-network one of the specified graphs and a local function for each node of the sub-network's identified graph.

13. A method of encoding sub-networks, the method comprising:

a) specifying a graph with a set of nodes;

b) storing the graph;

c) storing first and second sets of local functions, wherein each set includes a local function for each node of the graph, wherein the combination of the graph and the first set of local functions specifies a first sub-network, and the combination of the graph and the second set of local functions specifies a second sub-network;

d) for the first sub-network, storing a first identifier that specifies the graph and the first set of local functions; and

e) for the second sub-network, storing a second identifier that specifies the graph and the second set of local functions.

14. The method of claim 13, wherein each graph node and the node's corresponding local function define a circuit element of the sub-network.

15. The method of claim 14, wherein the graph represents a topology of the circuit elements in each of the sub-networks.